Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

You may not realize it, but your brain actually processes information in two very distinct ways. Like when you look at this photo, you instantly know she has blonde hair, is visibly angry, and likely has some choice words to yell. Without any effort, you experienced fast thinking.

But if you look at the following problem, something different happens. Sure, you immediately know it’s a multiplication problem and you knew you could solve it if you had the energy, but didn’t. If you do try, your muscles will tense, your pupils will dilate and your heart rate will increase. Now you’ve experienced slow thinking.

These two systems of fast and slow thinking dictate much of our perception and reaction in life. Take these lines, for example. It is clear that they’re different lengths, but if you measure them, they’re actually the exact same length. Even now that you know, System One—or, your fast thinking—can’t stop seeing the illusion because it acts automatically.

A similar effect is seen here. Which figure is the largest? Again, they’re all the same size, but the suggestion of perspective and depth causes your System One to interpret the picture as three-dimensional even though it’s on a flat two-dimensional surface. It’s making quick work of the available information and so you’re conscious System Two, or slow thinking, must compensate after the fact and choose not to believe your intuition or instinct.

Want to see your System Two in action? I’ll show you a string of four digits. You read them aloud, then add one to each of the original digits. If the card reads 3795, the correct response would be 4806. We’ll then go to the next card, and you will do the same followed by the next card. Ready? Go.

Few people can cope with more than four digits, but even harder is “Add Three.” The interesting bit is that though your pupils would have dilated, you often become effectively blind when you fully engage System Two. Did you notice the color of the text change? Or how about the fact that the numbers completely changed when I put them off to the side?

Listen to the following puzzle. A bat and a ball cost one dollar and ten cents. The bat cost one dollar more than the ball. How much does the ball cost? Chances are your System One intuition was yelling “ten cents,” but this appealing system one answer we know is wrong. In fact the correct answer is five cents. Even if you worked out the correct answer, you likely though of ten cents along the way. System One is trying to work out an answer as quickly and seamlessly as possible. Which is extremely beneficial in everyday life. If every activity required full mental effort, it would be exhausting. But knowing this allows us to understand that not all of our first impressions are correct.

How many animals of each kind did Moses take into the Ark? So few people detect what is wrong with this question that it has been dubbed “the Moses Illusion.” In fact, Moses took no animals. Noah did. Again, our brain invests as little resources as necessary so that things run quickly and smoothly. Because Moses is not abnormal in the biblical context, System One unconsciously detects an association between Moses and Ark, and quickly accepts the question.

In a similar way, System One generates context without you knowing. Reading each of the following may seem fairly simple: ABC, Ann approached the bank, and 12, 13, 14. But your brain actually interpreted these ambiguous statements without you ever knowing. You could have read it as: A 13 C, or 12 B 14, but your brain created the context unconsciously. Also, you likely imagined a woman with money on her mind walking towards a building with tellers. But if the sentence before this was “They were floating gently down the river,” the entire scene would have changed because “bank” is no longer associated with money. Without an explicit context, System One quickly generates one based on previous experience. In this case, you have likely visited more banks than rivers, and so the context is resolved accordingly. This ties into a concept called “priming.”

For example, if I said “wash,” how would you complete this word fragment? Most would see “soap.” But had I just shown you the word “eat,” you’d be more likely to see “soup.” In this way, both “eat” and “wash” prime your thoughts. Though System Two likes to think that it’s in charge and knows what’s going on, the truth is that priming effects have even been shown to affect and modify behavior. These arise in System One, and you have no conscious access to them. If you’d like to learn more about the thinking systems in your brain, check out the book Thinking Fast and Slow by Daniel Kahneman, which covers it in great detail. I’ll put a link in the description which you can check out. Got a burning question you want answered? Ask it in the comments, or on Facebook and Twitter and subscribe for more weekly science videos.